WHAT IS CLAIMED IS:

1. A system for detecting target molecules, comprising:

a plurality of sensors, each of the sensors including one or more associated probe molecules for interacting with the associated target molecules, each of the sensors exhibiting a physical change upon interacting with the associated target molecules; and

an optical detector, the optical detector positioned to receive a reflected beam of light from each of the plurality of sensors, wherein a property of the reflected beam of light for each of the plurality of sensors changes when the associated probe molecule interacts with the associated target molecules.

2. The system of claim 1, wherein each of the plurality of sensors include the same associated probe molecules for interaction with the same target molecules.

3. The system of claim 1, wherein each of the plurality of sensors include different associated probe molecules for interaction with different target molecules.

4. The system of claim 1, wherein the target molecules comprises at least one of the group consisting of:

a short single-stranded DNA sequence, an antigen, and a protein.

5. The system of claim 1, wherein the optical detector includes an optical sensor array.

6. The system of claim 5, wherein the optical sensor array comprises a CCD array.

7. The system of claim 5, wherein the optical sensor array comprises a CMOD array detector.

8. The system of claim 1, wherein the plurality of sensors comprises a plurality of micromechanical surface stress sensors (MSSS).

9. The system of claim 8, wherein the plurality of MSSS includes a microcantilever.

10. The system of claim 9, wherein the microcantilever comprises a reflective paddle portion.

11. The system of claim 10, wherein the reflective paddle portion comprises at least one strengthening ridge.

12. The system of claim 11, wherein the at least one strengthening ridge comprises a ridge running around at least a portion of the perimeter of the reflective paddle.

13. The system of claim 8, wherein the plurality of MSSS includes a micromembrane.

14. The system of claim 1, wherein the property of the reflected beam of light is a position.

15. The system of claim 1, wherein the property of the reflected beam of light is an intensity of at least a portion of an interference pattern.

16. The system of claim 1, further including one or more reference sensors.

17. The system of claim 1, further comprising:
a sensor base portion including a plurality of reservoirs, wherein various sensors of the plurality of sensors are disposed in different reservoirs.

18. The system of claim 17, wherein a portion of the plurality of sensors are disposed in one reservoir.

19. The system of claim 16, further comprising:
a sensor base portion including a plurality of reservoirs, wherein the at least one reference sensor is disposed in a different reservoir from the sensors including the associated probe molecules.

20. The system of claim 17, wherein the sensor base portion further includes a plurality of access channels, wherein each of the plurality of access chambers are associated with one of the plurality of reservoirs.

21. A system for detecting target molecules, comprising:

a pair of sensors, including a functionalized sensor with associated probe molecules for interacting with the associated target molecules, the functionalized sensor exhibiting a physical change upon interacting with the associated target molecules, and a non-functionalized reference sensor; and

an optical detector, the optical detector positioned to receive a reflected beam of light from each of the sensors, wherein a property of the reflected beam of light for the functionalized sensor changes when the associated probe molecule interacts with the associated target molecules.

22. The system of claim 21, wherein each of the sensors are microcantilevers.

23. A method, comprising:

functionalizing a plurality of sensors, wherein each of the plurality of sensors is functionalized to detect a different target material;

introducing sample fluids or gasses into regions proximate to each of the plurality of sensors;

reflecting light from a surface of each of the plurality of sensors; and

detecting reflected light from each of the plurality of sensors.

24. The method of claim 23, wherein the target material comprises at least one of the group consisting of:

a short single-stranded DNA sequence, an antigen, and a protein.

25. The method of claim 23, further including reflecting light from the surface of at least one reference sensor.

26. The method of claim 25, further including detecting reflected light from the at least one reference sensor.

27. The method of claim 23, wherein the plurality of sensors includes a first sensor including an associated probe molecule, and wherein the method further includes determining whether a sample fluid or gas for the first sensor includes a target material associated with a probe molecule.

28. The method of claim 27, wherein the determining includes comparing the position of the reflected light from at least one of the plurality of sensors at a first time with the position of the reflected light from the at least one of the plurality of sensors at a second time.

29. The method of claim 23, wherein introducing sample fluids or gasses into regions proximate to each of the plurality of sensors comprises introducing sample fluids or gasses into a plurality of individual reservoirs dedicated to individual sensors.

30. The method of claim 23, wherein introducing sample fluids or gasses into regions proximate to each of the plurality of sensors comprises introducing sample fluids or gasses into a plurality of individual reservoirs dedicated to individual groups of sensors.

31. The method of claim 23, wherein detecting the reflected light from each of the plurality of sensors comprises:

determining the position of the reflected light by calculating a spatial average of the intensity distribution of a spot of the reflected light.

32. The method of claim 31, further comprising:

rejecting individual pixel values from the calculation when the intensity of the pixels fall below a threshold value.

33. The method of claim 31, further comprising:

applying a gain factor algorithm to the calculation to give more weight to pixels having high sensitivity and low noise.

34. The method of claim 31, further comprising:

compensating for sensor drift over time.

35. The method of claim 26, wherein the plurality of functionalized sensors includes a first sensor including an associated probe molecule, and wherein the method further includes determining whether a sample fluid or gas for the first sensor includes a target material associated with a probe molecule by comparing the position of the reflected light from the first sensor with the position of the reflected light from the at least one reference sensor over time.

36. The method of claim 23, wherein each of the functionalized sensors are positioned in individual dedicated reservoirs.

37. The method of claim 23, wherein some of the plurality of functionalized sensors are positioned in the same reservoir.

38. The method of claim 26, wherein the reference sensor is positioned in a different reservoir from the plurality of non-reference sensors.

39. A method, comprising:

functionalizing a plurality of sensors, wherein each of the plurality of sensors is functionalized to detect the same target material;

introducing sample fluids or gasses into regions proximate to each of the plurality of sensors;

reflecting light from a surface of each of the plurality of sensors; and

detecting reflected light from each of the plurality of sensors.

40. The method of claim 39, further comprising:
wherein the plurality of functionalized sensors each include the same associated probe molecule, and wherein the method further includes determining whether a sample fluid or gas includes the target material by comparing the position of the reflected light from the plurality of functionalized sensors with the position of the reflected light from the at least one reference sensor over time.

41. A system, comprising:

a sensor base portion, the sensor base portion including a plurality of separate regions for holding fluid or gas, the sensor base portion further including a plurality of access channels, each of the plurality of access channels associated with one of the plurality of regions; and

a plurality of sensors, each of the plurality of sensors formed proximate to an associated one of the plurality of regions.

42. The system of claim 41, wherein the sensor base portion comprises silicon.

43. The system of claim 42, wherein the sensor base portion further comprises glass.

44. The system of claim 41, wherein the plurality of sensors comprises a plurality of MSSS.

45. The system of claim 44, wherein the plurality of sensors comprise microcantilevers.

46. The system of claim 45, wherein the microcantilever comprises a reflective paddle portion.

47. The system of claim 46, wherein the reflective paddle portion comprises at least one strengthening ridge.

48. The system of claim 41, further including at a reference sensor.

49. The system of claim 41, wherein each of the plurality of access channels has an inlet for providing a functionalization fluid or gas.

50. The system of claim 49, wherein each of the plurality of access channels has an outlet.

51. The system of claim 49, wherein the plurality of access channels share a common outlet.

52. The system of claim 51, wherein the common outlet is to provide a rinsing fluid or gas to each of the plurality of access channels.

53. The system of claim 51, wherein the common outlet is to provide a sample fluid or gas to each of the plurality of access channels.

54. The system of claim 49, wherein the inlet is configured to receive a micropipette for providing the functionalization fluid or gas.

55. The system of claim 41, further comprising:

an optical detector, the optical detector positioned to receive a reflected beam of light from each of the plurality of sensors, wherein a property of the reflected beam of light for each of the plurality of sensors changes when the associated probe molecule interacts with the associated target molecules.

56. The system of claim 41, wherein the each one of the plurality of sensors are disposed in a different separate region for holding fluid or gas.

57. The system of claim 41, wherein a portion of the plurality of sensors are disposed in one of the regions for holding fluid or gas.

58. The system of claim 41, wherein each of the plurality of sensors are positioned to be surrounded by fluid of gas when each of the separate regions for holding fluid or gas are filled with fluid or gas.

59. A microcantilever for use in a system for detecting target molecules, comprising:

a microcantilever body;

one or more associated probe molecules on the microcantilever body for interacting with the associated target molecules; and

a reflective paddle portion.

60. The system of claim 59, wherein the reflective paddle portion comprises at least one strengthening ridge.

61. The system of claim 60, wherein the at least one strengthening ridge comprises a ridge running around at least a portion of the perimeter of the reflective paddle.